What is claimed is:

1.   A method of forming spread spectrum codes for use in a code division multiple access communication system, the method comprising:

selecting a spread spectrum code with an ideal periodic auto-correlation function;

extending the spread spectrum code with a plurality of elements to form an extended spread spectrum code, wherein a non-periodic auto-correlation function of the extended spread spectrum code has a zero-correlation window, wherein the extending (step) comprises:

appending a first plurality of elements to a first end of the spread spectrum code, the first plurality of elements being identical to elements at a second end of the spread spectrum code; and

appending a second plurality of elements to the second end of the spread spectrum code, the second plurality of elements being identical to elements at the first end of the spread spectrum code.

2.   A method of forming spread spectrum codes for use in a code division multiple access communication system, the method comprising:

selecting a first spread spectrum code with an ideal periodic auto-correlation function;

forming a second spread spectrum code based on the first spread spectrum code, the second spread spectrum code having an ideal periodic auto-correlation function;

first extending the first spread spectrum code by a plurality of elements to form a first extended spread spectrum code; and

second extending the second spread spectrum code by a plurality of elements to form a second extended spread spectrum code, wherein the a non-periodic cross-correlation function of the first extended spread spectrum code and the second extended spread spectrum code has a zero-correlation window.

3.   The method of claim 2, wherein the first extending comprises:

appending a first plurality of elements to a first end of the first spread spectrum code, the first plurality of elements being identical to elements at a second end of the first spread spectrum code; and

appending a second plurality of elements to the second end of the first spread spectrum code, the second plurality of elements being identical to elements at the first end of the first spread spectrum code.

4.   The method of claim 3, wherein the second extending comprises:

appending a third plurality of elements to a first end of the second spread spectrum code, the third plurality of elements being identical to elements at a second end of the second spread spectrum code; and

appending a fourth plurality of elements to the second end of the second spread spectrum code, the fourth plurality of elements being identical to elements at the first end of the second spread spectrum code.

5.   The method of claim 2, wherein a non-periodic auto-correlation function of the first extended spread spectrum code has a zero-correlation window and wherein a non-periodic auto-correlation function of the second extended spread spectrum code has a zero-correlation window.

6.   A method of forming spread spectrum codes for use in a code division multiple access communication system, the method comprising:

forming a plurality of spread spectrum codes each having an ideal auto-correlation function; and

extending the plurality of spread spectrum codes to form a plurality of extended spread spectrum codes, wherein non-periodic cross-correlation functions among the extended spread spectrum codes each have a zero-correlation window.

7.   The method of claim 6, wherein the extending comprises:

first extending a first one of the spread spectrum codes by a first plurality of elements to form a first extended spread spectrum code; and

second extending a second one of the spread spectrum codes by a second plurality of elements to form a second extended spread spectrum code.

8.   The method of claim 7, wherein the first extending comprises:

appending a first plurality of elements to a first end of the first spread spectrum code, the first plurality of elements being identical to elements at a second end of the first spread spectrum code; and

appending a second plurality of elements to the second end of the first spread spectrum code, the second plurality of elements being identical to elements at the first end of the first spread spectrum code.

9.   The method of claim 8, wherein the second extending (step) comprises:

appending a third plurality of elements to a first end of the second spread spectrum code, the third plurality of elements being identical to elements at a second end of the second spread spectrum code; and

appending a fourth plurality of elements to the second end of the second spread spectrum code, the fourth plurality of elements being identical to elements at the first end of the second spread spectrum code.

10.   The method of claim 6, wherein the forming comprises:

selecting a first spread spectrum code with an ideal periodic auto-correlation function; and

producing a plurality of spread spectrum codes with ideal periodic auto-correlation functions by orthogonal rotation transformation of the first spread spectrum code.

11.   The method of claim 6, wherein non-periodic auto-correlation functions of the extended spread spectrum codes each have a zero-correlation window.

-10.   A spread spectrum communication device, comprising:

a code generator operable to generate a first code that has an ideal periodic auto-correlation function;

a first extended code generator operable to generate a first extended code by appending a plurality of elements to the first code, wherein the first extended code has an ideal periodic auto-correlation function, and wherein a non-periodic auto-correlation function of the first extended code has a zero-correlation window; and

a first spreader operable to spread a first stream of data with the first extended code.

-11.   The spread spectrum communication device of claim 10, wherein the first extended code generator is operable to append a first plurality of elements to a first end of the first code and a second plurality of elements to the second end of the first code, wherein the first plurality of elements are identical to elements at a second end of the first code, and wherein the second plurality of elements are identical to elements at the first end of the first code.

-12.   The spread spectrum communication device of claim 11, wherein a width of the zero-correlation window of the non-periodic auto-correlation function of the first extended code equals to a combined length of the first plurality of elements and the second plurality of elements.

13. The spread spectrum communication device of claim 10, wherein the code generator is operable to generate a second code that has an ideal periodic auto-correlation function, the spread spectrum communication device further comprising:

a second extended code generator operable to generate a second extended code by appending a plurality of elements to the second code, wherein the second extended code has an ideal periodic auto-correlation function, wherein a non-periodic auto-correlation function of the second extended code has a zero-correlation window, and wherein a non-periodic auto-correlation function of the first extended code and the second extended code has a zero-correlation window;

a second spreader operable to spread a second stream of data with the second extended code.

14. The spread spectrum communication device of claim 13, wherein the second extended code generator is operable to append a third plurality of elements to a first end of the second code and a fourth plurality of elements to the second end of the second code, wherein the third plurality of elements are identical to elements at a second end of the second code, and wherein the fourth plurality of elements are identical to elements at the first end of the second code.

15. The spread spectrum communication device of claim 14, wherein a width of the zero-correlation window of the non-periodic auto-correlation function of the second extended code equals to a combined length of the third plurality of elements and the fourth plurality of elements, and wherein a width of the zero-correlation window of the non-periodic cross-correlation function equals to the combined length.

16. The spread spectrum communication device of claim 13, further comprising:

a receiver operable to receive a third stream of data that spread with the first extended code and a fourth stream of data that is spread with the second extended code;

a first despreader operable to despread the third stream of data with the first code; and

a second despreader operable to despread the fourth stream of data with the second code.

17. The spread spectrum communication device of claim 10, wherein the code generator comprises a memory operable to store the first code.

18. A spread spectrum communication network configured to operate in a first pre-defined territory and a second pre-defined territory, the network comprising:

a first communication device located in the first territory, the first communication device operable to generate a first extended code from a first pre-defined code and operable to spread data using the first extended code, wherein a non-periodic auto-correlation function of the first extended code has a zero-correlation window; and

a second communication device located in the second territory, the second communication device operable to generate a second extended code from a second pre-defined code and operable to spread data using the second extended code, wherein a non-periodic auto-correlation function of the second extended has a zero-correlation window, and wherein a non-periodic cross-correlation function of the first extended code and the second extended code has a zero-correlation window.

19. The spread spectrum communication network of claim 18, wherein the first communication device is operable to append a first plurality of elements to a first end of the first pre-defined code and a second plurality of elements to the second end of the first pre-defined code, wherein the first plurality of elements are identical to elements at a second end of the first pre-defined code, and wherein the second plurality of elements are identical to elements at the first end of the first pre-defined code, and wherein the second communication device is operable to append a third plurality of elements to a first end of the second pre-defined code and a fourth plurality of elements to the second end of the second pre-defined code, wherein the third plurality of elements are identical to elements at a second end of the second pre-defined code, and wherein the fourth plurality of elements are identical to elements at the first end of the second pre-defined code.

20. The spread spectrum communication network of claim 18, wherein the first communication device is operable to de-spread data with the first pre-defined code, and wherein the second communication device is operable to de-spread data with the second pre-defined code.

21. The spread spectrum communication network of claim 18, wherein the first communication device is operable to communicate with a mobile communication device that is capable of de-spreading data with the first pre-defined code.

22. The spread spectrum communication network of claim 21, wherein the second communication device is operable to communicate with a mobile communication device that is capable of de-spreading data with the second pre-defined code.

23. A spread spectrum multiple access code for use in a spread spectrum multiple access system, wherein the spread spectrum multiple access code is embodied in a processor readable memory and comprises:

a predetermined spread spectrum multiple access code with an ideal periodic auto-correlation function,

a first plurality of elements appended to a first end of the predetermined spread spectrum multiple access code, and

a second plurality of elements appended to a second end of the predetermined spread spectrum multiple access code,

wherein the first plurality of elements are identical to one subset of elements of the predetermined spread spectrum multiple access code and wherein the second plurality of elements are identical to another subset of elements of the predetermined spread spectrum multiple access code, wherein a non-periodic auto-correlation function of the spread spectrum multiple access code has a zero-correlation window, and wherein the spread spectrum multiple access code is utilized by a processor to spread data.

24. The spread spectrum multiple access code of claim 1 wherein a width of the zero-correlation window equals a sum of the number of elements in the first plurality and the second plurality.

25. A spread spectrum multiple access code group for use in a spread spectrum multiple access system, the spread spectrum multiple access code group including at least a first spread spectrum multiple access code and a second spread spectrum multiple access code, wherein the spread spectrum multiple access codes are embodied in at least one processor readable memory and each comprise:

a pre-determined spread spectrum multiple access code with an ideal periodic auto-correlation function,

a first plurality of elements appended to a first end of the predetermined spread spectrum multiple access code, and

a second plurality of elements appended to a second end of the predetermined spread spectrum multiple access code,

wherein the first plurality of elements are identical to one subset of elements of the predetermined spread spectrum multiple access code and wherein the second plurality of elements are identical to another subset of elements of the predetermined spread spectrum multiple access code,

wherein a non-periodic auto-correlation function of each of the spread spectrum multiple access codes has a zero-correlation window, and wherein the spread spectrum multiple access codes are utilized by at least one processor to spread data.

26. The spread spectrum multiple access code of claim 25, wherein a non-periodic cross-correlation function between the first spread spectrum multiple access code and the second spread spectrum multiple access code has a zero-correlation window.